

Informational Document for Wisconsin Discharge Permit
Contaminated Groundwater from Remedial Action Operations
Permit No. WI-0046566-4
April 2001

Note: Send Request For Coverage(at end of this document) to local DNR wastewater engineer regarding coverage of a remediation wastewater discharge under this permit.

The Department has developed Generalized WPDES Permits (GP) that are designed to cover discharges from a class of facilities or industries whose wastewater discharges are similar in character. When a GP is issued, many facilities meeting its requirements may be covered under the same general permit. GP's currently exist for non-contact cooling water, groundwater remediations, non-metallic mining operations, landspreading of food processing wastewaters and fourteen other types of industrial operations.

The Department must send a cover letter notifying the facility that its discharge is appropriately covered under the general permit. Permittees **can not** decide to cover their own discharges under a general permit. If you wish to have coverage for a wastewater discharge, contact the regional DNR office to provide information about the discharge. Then the Department can decide on appropriate permit coverage.

GENERAL DESCRIPTION OF OPERATIONS COVERED

The remedial action general permit is being reissued to continue to provide a streamlined mechanism to regulate wastewater discharges from soil or groundwater remediation projects. Contaminated sites can pose a threat to public health or welfare. The Department continues to receive requests each year to discharge remediation wastewaters with minimal to significant contamination. In some cases, the requests are for a short duration discharge to verify the extent of contamination. In other cases, the requests are for long term discharges to control plume migration or to remove contaminants from aquifers. These requests are often received with short lead times not conducive to the normal 180 day WPDES permit issuance process. In most cases, the goal is to remove pollutants from soils or aquifers to prevent migration.

SUMMARY OF MAJOR CHANGES FROM THE PERMIT THAT EXPIRED IN MARCH OF 2001

The following is a short listing of the major proposed changes to the expired remedial action general permit. For more detail on these changes and information on other less significant changes refer to the topic specific section later in this informational document.

Updated List of Prohibited Bioaccumulators - Based on the Federal Great Lakes Criteria (which Wisconsin has adopted into NR 105 and NR 106, Wis. Adm. Code), the revised permit excludes discharges adding detectable quantities of any of the 21 bioaccumulating compounds. The list of bioaccumulators in the previous permit has been changed to include delta BHC, 4,4'-DDT, 4,4' DDE, Mirex, Photomirex, Hexachlorobutadiene, Octachlorostyrene and 1,2,3,4 Tetrachlorobenzene. The following compounds have been removed from the bioaccumulators list: Acrolein, Tech-BHC, 3,3-Dichlorobenzidine, Endosulfan, Endrin, Fluoranthene, Heptachlor and 2,4,6-Trichlorophenol.

Additional Limits for Seepage of Wastewater - For seepage discharges, limits were added for the following compounds to meet groundwater standards: Benzo(b) fluoranthene-0.02 ug/L, Chrysene-0.02 ug/L, Fluoranthene-80 ug/L, Fluorene-80 ug/L, Pyrene-50 ug/L, Pyridine-2 ug/L, and combined 1,2,4 & 1,3,5 Trimethylbenzenes-96 ug/L. The Toluene limit was raised to 200 ug/L, and the 750 ug/L limit was included for Total BETX to seepage (total sum of Benzene, Ethylbenzene, Toluene and Xylenes).

New limits were also added for seepage discharges for the following non-petroleum volatile organic compounds: 1,2-Dichlorobenzene - 60 ug/L, 1,3-Dichlorobenzene - 125 ug/L, 1,4-Dichlorobenzene - 15 ug/L, 1,1,1,2 Tetrachloroethane - 7 ug/L, 1,2,4-Trichlorobenzene - 14 ug/L.

Updated Statutory References - The references to chapter 147 were changed to chapter 283 based on legislative renumbering.

Updated Standard Requirements - The standard requirements section (H) has been updated to make the requirements consistent with individual permits currently being issued by the Department. The bypass conditions were expanded to include requirements for planned and unplanned bypasses. Other minor editorial changes were made to improve readability of some of the conditions.

Written Approval of Additives - A new paragraph added to the section B allows the Department to approve (in writing) the use of non-biocide additives as long as water quality standards are protected.

PERMIT APPLICABILITY CRITERIA

Facilities Covered - This permit is applicable to discharges from remedial action operations where the extracted contaminated groundwater is treated for pollutant removal and the discharge will not have significant impacts on receiving surface or groundwaters. Discharges to exceptional resource waters are allowed because these projects are actions to cleanup an existing groundwater contamination problem, and they are often undertaken to correct a water supply public health problem as required in Ch. NR 207.03(2).

Facilities Excluded - Discharges to "**outstanding resource waters**" listed in NR 102.10 or **public water supply** sources listed in NR 104, such as Lake Superior, Lake Michigan and Lake Winnebago, are not authorized under this GP. These waters have more restrictive water quality criteria. Regulation of discharges to outstanding resource waters and water supply sources requires an specifically drafted permit which provides the oversight and discharge limitations necessary to protect these drinking water sources.

Facilities Excluded - Discharges are not covered under this permit if they do not meet the **wetland protection** requirements of ch. NR 103, Wis. Adm. Code. For discharges that impact wetlands, a facility will need to submit information that allows the Department to determine if a discharge meets NR 103 code requirements.

Facilities Excluded - Discharges that have a potential to contain detectable quantities of **acrylonitrile** shall not be regulated by this permit. Such a discharge should be regulated by a separate WPDES permit specially drafted for the discharge. This permit does not regulate acrylonitrile because of the very low water quality criteria, problems in treating the compound and the difficulties of obtaining adequate analysis detection limits.

Facilities Excluded - Remediation sites are not eligible for this GP if any of the 21 listed **bioaccumulating toxic substances** are detected in the wastewater effluent discharge from the site. This is a slight change from the previous permit which required that no bioaccumulators be detected at the remediation site. It is felt that current activated carbon treatment technology can effectively remove these compounds in the rare case any may be found at a site.

Facilities Excluded - Discharges containing pollutants in quantities which must be limited (as specified in s. NR 106.05, Wis. Adm. Code) to prevent harm to aquatic life or human health are not eligible for this GP. Remedial action discharges will be evaluated by comparing the pollutant concentrations in the extracted groundwater with water quality criteria for fish and aquatic life acute or chronic effects, human threshold effects and human cancer effects. This evaluation for compliance with chapters NR 102, NR 105, NR 106, and NR 207, Wisconsin Administrative Codes, is performed with the help of a worksheet. For a simple hydrocarbon remediation wastewater with no detectable lead, the worksheet will make sure the discharge is not to an outstanding resource water or water supply source. For more complex cases, the worksheet will be filled in with assistance of a water quality specialist. This general permit shall only be used when the worksheet assisted water quality evaluation confirms that the permit limits are sufficiently restrictive to protect the receiving water quality. If contaminants are detected that are not specifically limited in the permit, the provisions of NR 106.05 shall be used to judge the reasonable potential for the contaminant to exceed any site specific water quality criteria. A separate WPDES permit shall be drafted on a case-by-case basis when a discharge contaminant level triggers a need for a additional limit or a limit that is more restrictive than that contained in the general permit.

LIMITATIONS FOR ALL DISCHARGERS

Wastewater Treatment - Wastewater treatment for pollutant removal is required for all discharges of contaminated groundwater, including pump test wastewaters. This treatment requirement is consistent with section 301(b)(2) of the Clean Water Act and the corresponding section 283.13 (2)(b) of the Wisconsin Statutes. The level of treatment shall be adequate to assure compliance with water quality standards or shall be equivalent to Best Available Treatment Economically Achievable (BAT), which ever is more restrictive. Section 281.41, Wis. Stats requires Department review and approval of wastewater treatment plans and specifications. When treatment units for contaminated groundwater are supplier furnished package units, a minimum plan submittal would be a diagram, a summary of the design, and unit sizing calculations.

Discharge Management Plan - The permit continues the requirement that the permittee submit a discharge management plan. The primary purpose of the management plan is to specify the contaminants that will be tested in the wastewater. The Department must conditionally approve, approve or reject the proposed discharge management plan. To comply with the permit, the facility must monitor the remediation discharges in compliance with a Department approved discharge management plan.

Compounds to be tested under the management plan come from three main areas, those limited in the GP, those designated to show effective pollutant removal, and other contaminants detected at low levels in the impacted groundwater. A large group of contaminants are directly limited in the permit; it is unlikely that any remediation project would have all of those contaminants.

Through the management plan, the permittee can propose to eliminate monitoring for parameters limited in the permit if they have not been detected in the groundwater monitoring wells. The second need for monitoring is to document that the treatment system is effectively removing contaminants. Often treatment effectiveness can be demonstrated by monitoring contaminants limited in the permit. However, there are cases when the primary remediation contaminants are not limited in the permit (for example, 1,1 Dichloroethane). In that case monitoring for those contaminants should be included in the management plan. The third need for monitoring data occurs when, in the site characterization, there are confirmed detects of other contaminants with water quality criteria listed in NR 105, Tables 1 through 9 or NR 140, Tables 1 through 3. To qualify to discharge under this permit, the levels of these compounds in the discharge must be low enough (as specified in NR 106.05) that no site specific water quality limits are required. However, monitoring should be specified to confirm that these pollutants will not exceed any surface or groundwater levels of concern.

Other components of the Discharge Management Plan would be details on sampling procedures, analysis methods, procedures for disposing of tower cleaning wastewaters, or proposals to establish alternate effluent limitations for wastewater infiltration discharges. Alternate groundwater limits are discussed further in the groundwater discharge section of this briefing memo.

Monitoring Frequency - The sampling frequency requirements were maintained from the previous permit (start at weekly, then reduced by letter from the DNR), except that an option for semi-annual sampling was added. Semi-annual sampling may be appropriate for stable, older remediation projects where there is a certainty that compliance with effluent limits will be maintained. The remediation and redevelopment program is also adding an option for semi-annual monitoring well sampling for sites nearing close-out.

Other Permits - Other permits or approvals may be required for the project. The facility is responsible for obtaining other necessary Federal, State or local approvals or permits. For example, any work performed below, or within 500 feet of the ordinary high water mark of navigable waters, in wetland areas, or within areas subject to local floodplain and shoreland regulations, must conform to all such county or local ordinances. Also, other applicable state permits and/or contracts required by Chapters 30, 31, and 87, Wis. Statutes would need to be obtained. The emission of Volatile Organic Contaminants from air stripping of contaminated groundwater shall be either approved, exempted from, or in compliance with a DNR air emission permit.

Treatment Equipment and Maintenance - Considering the type of pollutants that may be regulated under this permit, it is necessary that treatment equipment be in place and maintained to mitigate possible variations in discharge and effluent quality. All removed substances shall be disposed of in accordance with NR 205.07(3)a). Documentation records of the disposal operation shall be maintained on site for the life of the permit.

Pond Overflow or Leakage - The integrity of the containment area must be maintained. Overflows or leakage through dikes or berms may cause sloughing or washouts.

Total Residual Chlorine - Occasionally, air-stripping towers or activated carbon treatment units may become clogged from the growth of micro-organisms. This is especially true when there are nitrogen and phosphorus nutrients in the water. The oxygen rich, warm and wet environment in the treatment unit can be a great place for bacteria or fungi to grow. As the unit becomes clogged, the pollutant removal decreases until not enough water will flow through the unit. Then it must be cleaned to restore treatment efficiency. Acids, bases or biocides, such as chlorine, may be used to clean the growth of micro-organisms out of the treatment system. The preferred system would be to clean the treatment unit when it is out of service, and then capture the cleaning wastewater for acceptable off-site disposal, such as a sanitary sewer.

Alternatively, if the pH is between 6 and 9 S.U. and the biocide is chlorine only, the cleaning wastewater may be treated for removal of suspended solids (to less than 40 mg/L), and then discharged under this permit. The discharge of chlorinated water to surface waters shall not contain detectable amounts of Total Residual Chlorine using Standard Methods #408B, D or E (DPD titration or colorimetric), or by using an ion specific electrode approved in Ch. NR 219. The acute limit for total chlorine residual is 37 ug/L and the chronic criteria is 7 ug/L. Since both of these limits are lower than the detection limits for the methods listed above, the permit requires no detect of chlorine residual. All other biocides may not be discharged under this permit.

Other Water Treatment Additives - Water treatment additives vary from innocuous to highly toxic. This permit allows the use water treatment compounds that are innocuous for the most part. Many water treatment additives are used primarily to control corrosion or prevent deposition of scale forming materials and do not exhibit any residual toxic effects on receiving waters.

Only additives that have been reviewed and approved in writing by the Department may be discharged under this permit. Facilities are required to submit information regarding the toxicity of the additive and the proposed treatment regime so that the Department can determine if it is allowable and won't negatively impact aquatic life or groundwater. For surface water dischargers, the topological information needed is (at least) one 48-hour LC₅₀ or EC₅₀ value for daphnia magna or ceriodaphnia dubia, and (at least) one 96-hour LC₅₀ or EC₅₀ value for either fathead minnow, rainbow trout or bluegill. This toxicity information is often provided in the Material Safety Data Sheet (MSDS).

In some cases, chemical manufacturers provide LC₅₀ or EC₅₀ values only for the active ingredient or a component of the product. It is not possible for the Department to ascertain the toxicity of the **whole product** on the basis of LC₅₀ or EC₅₀ values for product constituents. This is because of the potential for synergistic effects of the other constituents of the product to affect the whole product toxicity. If the facility is unable to provide the whole product toxicity, and the Department's additive database does not have the toxicity information, the facility will not be able to have the additive approved for discharge under the permit.

The Department must also approve changes in the types or quantities of additives discharged. Changes in additive use can change the wastewater discharge characteristics and could impact aquatic life or groundwater. Except for chlorine, the use of biocide water treatment additives requires regulation by an individual permit due to the toxic effectiveness of the compounds.

DISCHARGES OF PETROLEUM REMEDIATION WASTEWATERS TO SURFACE WATERS

Treatment Based Limits - As authorized by NR 220.21, the permit contains limits for petroleum product remediation wastewater that represents Best Available Treatment (BAT) in the professional judgment of the Department. These limits are based upon readily available air stripping and oil/water separator treatment technology. The limits for **benzene and BETX** (the sum of benzene, ethylbenzene, toluene and total xylenes) are the same as the expired permit. It is thought the treatment level required to meet the benzene and BETX limits will adequately remove other volatile petroleum product constituents. The permit also contains a limitation for Napthalene at 70 ug/L and a requirement to monitor for MTBE (Methyl Tert Butyl Ether), an oxidant gasoline additive.

Limits and monitoring requirements for Petroleum discharge to surface waters:

<u>Parameter</u>	<u>Effluent Limit</u>	<u>Sample Type</u>	<u>Sample Frequency</u>	<u>Test Method</u>
Flow	-	Total Daily	See (a) below	See NR 218.05
Benzene	50 ug/L, Monthly Avg.	Grab	See (a) below	See (b) below
Total BETX	750 ug/L, Daily Maximum	Grab	See (a) below	See (b) below
MTBE	-	Grab	See (a) below	See (b) below
Polynuclear Aromatic				
Hydrocarbons	0.1 ug/L, Monthly Avg.	Grab	See (a) below	See (b) below
Benzo(a)pyrene	0.1 ug/L, Monthly Avg.	Grab	See (a) below	See (b) below
Naphthalene	70 ug/L, Monthly Avg.	Grab	See (a) below	See (b) below
Total Recoverable Lead	50 ug/L, Daily Maximum	Composite	See (a) below	See (b) below
Total Recoverable Lead (Site Specific)	*ug/L, Weekly Average	Composite	See (a) below	See (b) below
Total Recoverable Lead (Site Specific)	*mass/day, Weekly Average	Composite	See (a) below	See (b) below
Oil/Grease	10 mg/L, Daily Maximum	Grab	See (a) below	See (b) below
Total Suspended Solids	40 mg/L, Daily Maximum	Grab	See (a) below	See (b) below

notes (a) & (b) set monitoring frequency and specify wastewater and SW-846 test methods.

* - see the lead limits paragraph below.

Other Petroleum Limits - Groundwater from remediation of "heavier" products such as heating fuel, diesel fuel, jet fuel, and other similar petroleum products may contain **polynuclear aromatic hydrocarbons**. The restrictive limit for polynuclear aromatic hydrocarbons (PAH's) is retained from the previous permit. Efficient free product separation is also required to remove the heavier petroleum product constituents. The general permit PAH limits of 0.1 ug/L were developed based on the potential carcinogenic effects and the judgment that this low effluent level is achievable with activated carbon treatment. Benzo(a)pyrene is limited individually at 0.1 ug/L based on this compound having the most toxological data. The PAH group criteria applies to the following compounds: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene. The permit requires that the sum of the detected amounts of any of these 10 polynuclear aromatic hydrocarbons in the group to be less than 0.1 ug/L. Alternatively, the permittee can demonstrate compliance with the limit if there is no detection of these compounds using EPA methods 610 or 8310 High Pressure Liquid Chromatography.

A more restrictive site specific permit shall be drafted for a direct discharge of benzene or polynuclear aromatic hydrocarbons to waters, such as the Great Lakes or Lake Winnebago, that are classified as public drinking water sources.

Lead Limitations - The permit contains limits for total recoverable lead based on the number of remediation projects detecting significant amounts of lead in the wastewater. The permittee should report the test results for total recoverable lead. The **daily maximum lead limit** of 50 ug/L is thought to represent a

reasonably achievable treatment technology limit for all discharges. Experience to date has indicated that the form of lead in gasoline, tetra ethyl lead, is strongly attached to fine sediment particles that may be removed from the aquifer by pumping. Therefore, it is believed that efforts to remove the fine sediment particles will be needed to control total recoverable lead in discharges from leaded gasoline remediation projects.

The permit also contains **weekly average lead limits** that can be quite restrictive for low flow receiving waters. Chronic lead concentration and mass limits are needed due to the wide range of receiving water flows that can be encountered for these discharges. The weekly average lead limit is a function of: the receiving water hardness as specified in NR 105.06 table 6 (revision 8/97), the effluent average day design flow (Q_e), the receiving water background concentration (C_s), and the receiving water design flow (Q_s) as specified in NR 106.06(3). To calculate the weekly average lead limit for the general permit, the WQC variable in the NR106.06(3) formula needs to be adjusted to reflect 1/3 of the assimilative capacity to prevent significant lowering of water quality per NR 207.04(2)(c)2. Separate formulas are provided in NR 106.06(3) for discharges to streams and discharges to lakes. Since most of the discharges are to streams, the permit also provides formulas to calculate the weekly average lead permit limits for streams directly. Department staff will need to assist the permittee with the calculation of the weekly average lead limits. The result of the lead limit calculation should be reported in writing (possibly in the cover letter) to make sure there is no confusion over the correct calculation result. The average day effluent design flow should be used for Q_e in the calculation. This should be a stable number because remediation projects are usually designed for a certain groundwater withdrawal pumping rate to control plume migration.

DISCHARGES OF VOLATILE ORGANIC COMPOUNDS TO SURFACE WATERS

Treatment - This permit requires effective treatment, such as air stripping or activated carbon adsorption, for all discharges containing volatile organic chemicals. The Clean Water Act requires effective treatment to minimize the discharge of contaminants into waters of the state, even when the untreated wastewater could meet the limits listed above. This requirement for wastewater treatment will assure compliance with Wisconsin Water Quality Standards listed in NR 105, Wis. Adm. Code in almost all cases. When more restrictive water quality based effluent limits are needed, such as for direct discharges of certain VOC contaminants to warm or cold water streams that have very low mean annual flows, a site specific WPDES permit shall be individually drafted to regulate the discharge.

Unchanged Limits - The limits for volatile organic compounds are the same as those in the previous permit. These limits represent effluent concentrations judged to be achievable with a well designed air stripper.

Monitoring Frequency - The sampling frequency requirements start at weekly, then the frequency can be reduced by letter from the DNR.

Water Quality Evaluation - Department staff need to evaluate discharges from volatile organic compound (VOC) remediation projects. GP limits need to be compared with Wisconsin's water quality criteria for the priority pollutant VOC's. The human threshold and human cancer criteria are from Ch. NR 105, and the fish and aquatic life acute criteria are from EPA documents. To get an idea of what concentrations are reasonably achievable with available treatment technology, the final BAT regulations for the Organic Chemicals point source category (52 CFR 42582, November 5, 1987) were referenced. The limits chosen for this general permit were designed to be achievable with available treatment technology, and be restrictive enough to meet water quality standards (NR 105, 106 and 207) in almost all cases.

Limits and monitoring requirements for VOC's in discharge to surface waters:

<u>Parameter</u>	<u>Effluent Limit</u>	<u>Sample Type</u>	<u>Sample Frequency</u>	<u>Test Method</u>
Flow	-	Total Daily	See (a) below	See NR 218.05
Acrylonitrile	No Discharge	-	-	-
Bromoform	120 ug/L, Monthly Avg.	Grab	See (a) below	See (d) below
Carbon Tetrachloride	150 ug/L, Monthly Avg.	Grab	See (a) below	See (d) below
Chloroform	120 ug/L, Monthly Avg.	Grab	See (a) below	See (d) below
Dichlorobromomethane	120 ug/L, Monthly Avg.	Grab	See (a) below	See (d) below
1,2-Dichloroethane	180 ug/L, Monthly Avg.	Grab	See (a) below	See (d) below
1,1-Dichloroethylene	50 ug/L, Monthly Avg.	Grab	See (a) below	See (d) below
Methyl Bromide	120 ug/L, Monthly Avg.	Grab	See (a) below	See (d) below
Methyl Chloride	120 ug/L, Monthly Avg.	Grab	See (a) below	See (d) below
1,1,2,2-Tetrachloroethane	50 ug/L, Monthly Avg.	Grab	See (a) below	See (d) below
Tetrachloroethylene	50 ug/L, Monthly Avg.	Grab	See (a) below	See (d) below
1,1,2-Trichloroethane	50 ug/L, Monthly Avg.	Grab	See (a) below	See (d) below
1,1,1-Trichloroethane	50 ug/L, Monthly Avg.	Grab	See (a) below	See (d) below
Trichloroethylene	50 ug/L, Monthly Avg.	Grab	See (a) below	See (d) below
Vinyl Chloride	10 ug/L, Monthly Avg.	Grab	See (a) below	See (d) below
Total Suspended Solids	40 mg/L, Daily Maximum	Grab	See (a) below	See (d) below

notes (a) & (d) set monitoring frequency and specify wastewater and SW-846 test methods.

VOC Limits Restrictive Enough - The impact of the remediation site discharge on the receiving surface water quality must be evaluated for each request to discharge under this section of the permit. This evaluation should be checked by Water Quality staff in all cases. Four main things must be known to determine if the general permit limits are sufficiently restrictive to protect surface water quality: a characterization of the pollutants in the discharge, the discharge average day design flow rate, the receiving water classification, and the surface water mean annual flow. It is assumed that the stream background concentration of VOC's is zero due to stream turbulence and bio-degradation. The expected pollutant concentration after mixing with the receiving water mean annual flow must be compared with 1/3 of the water quality criteria (to prevent significant lowering of water quality per NR 207) for the aquatic or use classification.

For **example**, the general permit limit for carbon tetrachloride may not be sufficiently restrictive to prevent significant lowering of water quality when a trout stream mean annual flow is less than 45 times the discharge average day design flow rate. For a dilution/mixing ratio of 20, the general permit limit of 150 ug/L would result in a theoretical carbon tetrachloride concentration after mixing in the stream of 7.5 ug/L. In this case, 7.5 ug/L is greater than 1/3 of the water quality criteria (3.3 ug/L), and that would result in significant lowering of water quality as defined in NR 207. As long as treatment to meet this limit is technically and economically achievable, the GP should not be used for this discharge. An individual, site specific permit should be drafted with a carbon tetrachloride limit of 3.3 ug/L.

If there is no economically achievable treatment system that can meet this limit, the general permit could be used to allow a mixed cold water in-stream carbon tetrachloride concentration up to 10 ug/L (the whole assimilative capacity under the water quality criteria). An increase up to 10 ug/L of Carbon Tetrachloride in the stream could be allowed only if the treatment options and costs comparisons are evaluated as specified in NR 207.04(1)(d). If these documented treatment and cost evaluations allow significant lowering of water quality in the stream, the general permit limit would be protective up to a flow dilution/mixing ratio of 15.

DISCHARGES TO GROUNDWATER

Infiltration to Groundwaters not part of the Remediation Zone - When there are no surface water resources in the area or a significant part of the discharge would seep into the ground before entering a surface water, the impacts from remedial action discharges are regulated by NR 140, Wis. Adm. Code. In cases such as this, the general permit requires that the wastewater treatment system be designed to minimize the concentration of the pollutants in the groundwater to the extent that it is technically and economically feasible. Based on the requirement to minimize pollutant concentrations in the groundwater, the general permit establishes monthly average effluent limitations that are equivalent to NR 140 Preventive Action Limits. In other words, the effluent would have to meet limitations that are equivalent to PAL's at the end of the discharge pipe. Expressing the limit as a monthly average recognizes that any higher short-term values would likely not be significant due to dispersion or mixing as the water flows through the ground.

Petroleum Compounds:

Acetone	-	200 ug/L	Methyl ethyl ketone	-	90 ug/L
Benzene	-	0.5 ug/L	Methyl isobutyl ketone	-	50 ug/L
Benzo(a)pyrene	-	0.02 ug/L	Methyl tert butyl ether	-	12 ug/L
Ethylbenzene	-	140 ug/L	Naphthalene	-	8 ug/L
Ethylene Dibromide	-	0.005 ug/L	Styrene	-	10 ug/L
Fluorene	-	80 ug/L	Tetrahydrofuran	-	10 ug/L
Lead	-	1.5 ug/L	Toluene	-	69 ug/L
			Xylene	-	124 ug/L

Chlorinated Organics:

1,1-Dichloroethane	-	85 ug/L	Methylene Chloride	-	0.5 ug/L
1,2-Dichloroethane	-	0.5 ug/L	Pentachlorophenol	-	0.1 ug/L
1,1-Dichloroethylene	-	0.7 ug/L	1,1,2,2 Tetrachloroethane	-	0.02 ug/L
1,2-Dichloroethylene (cis)	-	7 ug/L	Tetrachloroethylene	-	0.5 ug/L
1,2-Dichloroethylene (trans)	-	20 ug/L	1,1,1-Trichloroethane	-	40 ug/L
Carbon tetrachloride	-	0.5 ug/L	1,1,2-Trichloroethane	-	0.5 ug/L
Chloroethane	-	80 ug/L	Trichloroethylene	-	0.5 ug/L
Chloroform	-	0.6 ug/L	Vinyl Chloride	-	0.02 ug/L
Chloromethane	-	0.3 ug/L			

New limits for the permit based on NR 140 revisions:

Benzo(b)fluoranthene	-	0.02 ug/L	Pyrene	-	50 ug/L
Chrysene	-	0.02 ug/L	Pyridine	-	2 ug/L
Fluoranthene	-	80 ug/L	Combined 1,2,4 & 1,3,5		
Fluorene	-	80 ug/L	Trimethylbenzenes	-	96 ug/L
1,2-Dichlorobenzene	-	60 ug/L	1,1,1,2 Tetrachloroethane	-	7 ug/L
1,3-Dichlorobenzene	-	125 ug/L	1,2,4-Trichlorobenzene	-	14 ug/L
1,4-Dichlorobenzene	-	15 ug/L			

Alternate Effluent Limits for Infiltration - The permit provides an opportunity for the permittee to propose and justify alternate effluent limitations (up to a level equal to NR 140 Enforcement Standards) in the Discharge Management Plan for infiltration discharges to groundwaters not part of the remediation zone. These discharge systems are eligible for a design management zone (DMZ) under NR 140. The permittee would have to show that the limits listed in the permit are not technically or economically achievable, or that factors (such as dispersion or degradation) would occur inside the design management zone. The Department can approve, conditionally approve or reject the proposed management plan. The results of a groundwater model would usually be needed to help demonstrate that dispersion or degradation would cause the groundwater to be less than the PAL outside the DMZ. Sampling of monitoring wells installed around the infiltration system may be required in the discharge management plan in cases when an alternate effluent limit is approved.

Remediation of In-situ Contaminants - The permit contains conditions that regulate infiltration or injection discharges that are part of in-situ bioremediation projects. Since the water being discharged almost always contains some contaminants, a discharge permit would be required. This part of the general permit is designed to meet the wastewater permitting needs for these projects. Efficient regulation of bioremediation projects requires coordination with Department staff in the remediation and redevelopment program.

Due to contaminant release or spill sites not being eligible for a design management zone, the discharge requirements were split between those meeting preventive action limits (PAL's) in the water prior to injection or infiltration, and other discharges that would be above the PAL's in the infiltrated or injected water. With no DMZ, discharge levels above the PAL's would require a temporary exemption issued in accordance with NR 140.28(5). The permit establishes effluent limitations that are equivalent to PAL's for projects that do not have a NR 140 temporary exemption. In cases where the discharge is above PAL's, detailed limitations and other requirements for a the in-situ remediation project can be specified in the NR 140.28(5) temporary exemption and the remedial action plan approved under s. 292.31, Wisconsin Statutes. The permit also contains other conditions and requirements, such as plume control and degradation by-product monitoring, for in-situ remediation projects that have been selected from the most recent environmental repair program guidance on in-situ bioremediation.

Agri-chemical Remediation Wastewaters - The permit contains conditions that regulate landspreading or spray irrigation of wastewaters from agri-chemical remediation projects. The extracted groundwater from these sites often contains pesticides, ammonia-nitrogen, nitrate-nitrogen, chlorides and phosphorus. Since the water being discharged contains contaminants, a discharge permit is required. Regulation of the discharges from agri-chemical remediation projects needs to be coordinated with staff in the Department of Agriculture, Trade and Consumer Protection. The permit contains nitrogen and chloride loading limitations from NR 214, Wi. Adm. Code, that are consistent with the limits put on other dischargers to landspreading or spray irrigation. A ponding and runoff condition is also included due to the need to prevent wastewater from collecting in a localized area or entering a surface waterway. The permit requires that any agri-chemical remediation wastewaters spread on farm fields be applied for the beneficial use of the crop, and that any pesticide contribution from the remedial action water be in accordance with the appropriate pesticide product label restrictions.

Standard industrial wastewater permit conditions from NR 205 (reporting data, process changes, noncompliance, spills, etc.) are included as Part H of this permit. The permit is proposed to expire on March 31, 2006. Prior to permit expiration, the department will send a notice of proposed permit reissuance asking for public comment on the draft of the permit to be issued for the next 5 years.

Jeffrey W. Brauer, Environmental Engineer
Permits and Pretreatment Section
Bureau of Watershed Management
Brauej@DNR.STATE.WI.US
Madison, Wisconsin (608) 267-7643

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For

Remedial Action General Permit

WPDES Permit No. WI-0046566-4

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